Notice of Allowability	Application No.	Applicant(s)	
	10/781,684	SONG, HAI-ZHI	
	Examiner	Art Unit	
	Thomas L. Dickey	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to *Supplemental Response to Election / Restriction filed 06/04/2007*.

2. ☒ The allowed claim(s) is/are *1,3,4 and 8-16*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

Claims 1,3,4,8,9, and 10 are allowed over the references of record because none of these references disclosed or can be combined to yield the claimed invention such as the quantum semiconductor device as recited in claim 1.

As discussed in the paper mailed 6/30/2006, Shields 6,720,589 and Jain et al. 6,498,360 each disclose a quantum semiconductor device having all the limitations of claim 1 except for the limitation that at least a portion of the surface of the crystal forming the second layer ("crystal strains generated in the surface of the second semiconductor layer") be strained. Applicant has chosen to ascribe said to strain a particular cause ("crystal strains generated ... due to the presence of the quantum dot") but generally speaking the means Applicant uses in the course of assembling his claimed device does not limit the device per se. See *SmithKline Beecham Corp. v. Apotex Corp.*, 78 USPQ2d 1097, 1100 (Fed. Cir, 2006 ("While the process set forth in the product-by-process claim may be new, that novelty can only be captured by obtaining a process claim"). See also MPEP § 2113. The bottom line is that the cited references simply do not disclose or suggest the claimed second layer surface strain, from any cause.

Some might speculate that the close proximity of the quantum dot might inherently cause strain in the surface of the second layers of Shields' and Jain et al.'s devices.

Evidence of such inherent strain would, in the Examiner's opinion, mean that the devices disclosed by Shields and Jain et al. actually anticipate the claimed device. Further, the Examiner is well aware that there is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure *at the time of invention*. See *Schering Corp. v. Geneva Pharm. Inc.*, 339 F.3d 1373, 1377, 67 USPQ2d 1664, 1668 (Fed. Cir. 2003) (rejecting the contention that inherent anticipation requires recognition by a person of ordinary skill in the art before the critical date and allowing expert testimony with respect to post-critical date clinical trials to show inherency). See also MPEP § 2112 (section II).

Although the Examiner obviously has no access to the type of experimentally based expert testimony used to find inherency in *Schering*, the Examiner has searched the available literature up through the present date and has not found extrinsic evidence that the close proximity of the quantum dot would necessarily cause strain in the surface of the second layers of Shields' and Jain et al.'s devices. The reader should keep in mind that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). Again, see MPEP § 2112 (section IV).

Rejoinder under Ochiai/Brouwer

2. Applicant argues in his 6/4/07 remarks that claims 11-16 should be rejoined under the Ochiai/Brouwer doctrine. Particularly, Applicant argues that the claim 11 language "forming a dot-shaped structure on the surface of the second semiconductor at a position above the quantum dot due to strains generated in the surface of the second semiconductor layer," should be interpreted as claiming the steps of forming, in the completed structure made by the claim 11 process, 1) a dot-shaped structure, and 2) strain in the surface of the second semiconductor layer. Any processing step of (perhaps temporarily) generating strain in the layer cannot, in Applicant's view, be considered to have been included into the claimed process by the language, "forming a dot-shaped structure on the surface of the second semiconductor at a position above the quantum dot due to strains generated in the surface of the second semiconductor layer."

On consideration the Examiner agrees with Applicant's view of claim 11. Claim language should be broadly interpreted, see *In re Hyatt*, 21 1 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000), but in view of Applicant's original application, *id.*. In this case Applicant's original application includes a claim (claim 2 at the time of filing) to a product that includes "crystal strains generated in the surface of the second semiconductor layer..." Reading process claim 11 to require the forming, ultimately, of a complete device that includes a strained portion of the surface of the second layer, it is

commensurate in scope with allowable product claim 1 and should be rejoined. See MPEP §§ 806.05(g)(h) and 2116.01.

Claims 11-16 are allowed over the references of record because none of these references disclosed or can be combined to yield the claimed invention such as the process, as recited in claim 11, that necessarily produces, as its end product, the novel, non-obvious device of claim 1.

Conclusion

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L. Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Sue A. Purvis, at 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Thomas L. Dickey/
Primary Examiner
Art Unit 2826